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Notice of Allowability	Application No.	Applicant(s)	
	10/656,827	LI ET AL.	
	Examiner	Art Unit	
	Andrew Schechter	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--
 All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the filing of 11 April 2005.
2. ☒ The allowed claim(s) is/are 1,3-15,23 and 25-27.
3. ☒ The drawings filed on 05 September 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Ralph J. Crispino, Reg. No. 46,144, on 11 April 2005.

The application has been amended as follows:

In the Claims:

Claims 16-22 are cancelled.

In claim 3, line 1, the phrase "of claim 2" has been replaced with --of claim 1--.

In claim 7, line 2, the phrase "the first bandwidth" has been replaced with --the broad bandwidth--.

In claim 13, line 3, the phrase "bandwidth produced in the means" has been replaced with --bandwidth is the light in the means--.

In claim 27, line 2, the phrase "a light controlling film of claim 1 controllably reflecting infra-red light," has been replaced with --a light controlling film controllably reflecting infra-red light, having a first surface and a second surface, comprising:

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a polymerized polymer network, the polymer network varying spatially in a direction normal to the first surface, the polymerized polymer network comprising:

a cross-linked high molecular weight polymeric material; and

a low molecular weight liquid crystal material, the crosslinked high molecular weight polymeric material provided in an amount less than 20% by weight of the film,

wherein the high molecular weight and the low molecular weight form a material having cholesteric liquid crystal (CLC) order, the CLC order oriented with respect to the first and second surfaces, the pitch of the CLC order varying non-linearly in a direction perpendicular to the first surface, and

wherein light having a first polarization and a broad bandwidth incident on the first surface is substantially reflected from the film, and wherein light having a second polarization and the broad bandwidth incident on the first surface is not substantially reflected from the film, and wherein an electric field impressed in the film controls the reflection of light having the first polarization when the electric field has a component in a direction normal to the first surface,--.

End of examiner's amendment.

Allowable Subject Matter

2. Claims 1, 3-15, 23, and 25-27 are allowed.
3. The following is an examiner's statement of reasons for allowance:

The prior art does not disclose or fairly suggest the device of claim 1, in particular the limitations that the light controlling film has cholesteric liquid crystal (CLC) order whose pitch varies non-linearly in a direction perpendicular to the first surface, and that an electric field impressed in the film controls the reflection of light.

Considering the nearest art: U.S. Patent No. 5,762,823 to *Hikmet*, for instance, discloses a cholesteric filter which is switchable with such an electric field, but does not disclose the CLC pitch varying non-linearly. U.S. Patent No. 5,506,704 to *Broer et al.*, for instance, discloses the CLC pitch varying, but linearly rather than non-linearly [see Fig. 5]. U.S. Patent No. 5,691,789 to *Li et al.*, for instance, discloses a reflective polarizer with CLC pitch varying non-linearly, but does not disclose it being controllable by an electric field as recited in claim 1. Claim 1 is therefore allowed, as are its dependent claims 3-15, 23, and 25-27.

Two terminal disclaimers were filed 11 April 2005 to overcome potential obvious-type double patenting rejections. The attorney for the applicant asked the examiner to clarify which claims would have been subject to such rejections.

Claims 1 and 3-15 would have been rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-14 of U.S. Patent No. 6,473,143 to *Li et al.*, in view of U.S. Patent No. 5,188,760 to *Hikmet et al.* Claim 1 of *Li et al.* recites all the limitations of the present claim 1, except that *Li* recites "low molecular weight polymeric material" where the present claim recites "low molecular weight liquid crystal material". *Hikmet* teaches [col. 2, lines 14-18, col. 4, lines 14-22], for an analogous polymerized polymer network having two such

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components, that the low molecular weight material can be a liquid crystal material; it would have been obvious to one of ordinary skill in the art at the time of the invention to use a low molecular weight liquid crystal material in the device of *Li's* claim 1, motivated by *Hikmet's* teaching that it does not or hardly polymerizes when the other material is polymerized to form the polymerized network, thus obtaining the desired film. Claim 1 would therefore have been rejected. The present dependent claims 3-15 are analogous to *Li's* dependent claims 2-14, respectively, so claims 3-15 would also have been rejected. This potential rejection was overcome by the filing of the terminal disclaimer with respect to U.S. Patent No. 6,473,143 on 11 April 2005.

At least claim 1 would have been provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 24 of pending U.S. Patent Application 10/281,569 in view of U.S. Patent No. 5,188,760 to *Hikmet et al.* Claim 24 recites the key features that the polarized light reflecting molecules have a non-linear distribution and that an electric field impressed across the layer changes the reflectivity of the layer. *Hikmet* teaches the high and low molecular weight materials and cholesteric order with pitch varying as the molecules. At least claim 1 would therefore have been provisionally rejected (claim 24 of 10/281,569 has not yet been patented). This potential rejection was overcome by the filing of the terminal disclaimer with respect to U.S. Patent Application 10/281,569 on 11 April 2005.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Election/Restrictions

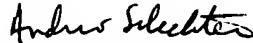
4. Applicant's election without traverse of Group I and Species B in the reply filed on 20 January 2005 is acknowledged.
5. Regarding the Election of Species requirement, claim 1 is generic and allowable. Accordingly, the restriction requirement as to the encompassed species is hereby withdrawn and claims 10, 12, and 14, directed to the species A, C, and D, are no longer withdrawn from consideration since all of the claims to this species depend from or otherwise include each of the limitations of an allowed generic claim.
6. This application is in condition for allowance except for the presence of claims 16-22 to an invention non-elected without traverse. Accordingly, claims 16-22 have been cancelled.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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14 April 2005